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ABSTRACT

Like many parts of the United States, Colorado is facing a significant hazardous waste problem. Radioactive and chemical wastes generated by the Rocky Flats Nuclear Plant, the toxic Lowry Land Fill Site, industrial dumps, and heavy land and air traffic contribute to water, land, and air pollution in the state. As part of a statewide response combining environmental remediation programs with the creation of new jobs, Front Range Community College has developed a Hazardous Material Technology Program to educate workers, supervisors, and managers in this field. From the first press conference to the beginning of the program in August 1988, the college drew inquiries from more than 500 students and companies. The program's first 103 students comprised a diverse group, including firefighters, police officers, geologists, geophysicists, chemists, biologists, computer experts, nurses, and consultants. The program includes an Associate of Science degree program for college transfer students, a certificate program for those who only need specialized training, a Cooperative Education internship for job experience and entry, and one-week courses in Environmental Health and Safety for the protection of those working with hazardous materials. The one-week courses have proved especially successful, training over 100 students during the first summer session and generating enough funds to purchase the equipment which initially had been borrowed. The long-range goals of the program are to: (1) provide a model curriculum for other community colleges and universities; (2) provide information to small businesses that generate hazardous wastes about appropriate recycling and legal and safe disposal methods; and (3) promote a national awareness of the environmental issues and regulations related to the production, treatment, recycling, and disposal of hazardous materials and wastes. (JMC)

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HAZARDOUS WASTE MANAGEMENT:

A VIEW TO THE NEW CENTURY, 2001

Gwen Burton

Front Range Community College

1989

Paper presented at the 69th Annual Convention of the American Association of Community and Junior Colleges, Washington, DC, March 29-April 1, 1989.

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HAZARDOUS WASTE MANAGEMENT:

A View to the New Century, 2001.

FRCC Speech at ACCJC

by Gwen Burton,Ph.D.,

HAZARDOUS MATERIALS TECHNOLOGY

FRONT RANGE COMMUNITY COLLEGE,

WESTMINSTER, COLORADO

We can only postulate what our world will be like in 2001; but when we look around us at the damage we have done to the air we breathe, the water we drink and the land on which we live; we wonder if there will be any clean fresh air, clear pure water and uncontaminated land. At present, many tons of insalubrious gas, liquid and solid wastes are generated for each person in the US every year. Less than 3% is garbage, waste water, automobile and wood stove emissions and wastes. The remaining is produced during the manufacture and distribution of goods for human use.

As we become more aware of the damage we are causing to our environment with the hazardous wastes we generate, use and dispose of, we become more determined to reduce the amount and toxicity of the damaging materials, to recycle hazardous wastes,

to clean up the existing hazardous waste dumps, and to prevent further contamination of our air, water and land. We estimate that it could cost corporate America more than $150 billion before the end of this century for environmental cleanup work to comply with federal and state environmental regulations to prevent expensive lawsuits and fines. This estimate is based on the total that industry is expected to spend upgrading hazardous waste disposal facilities (23 billion), cleaning up state and federal Superfund sites (38 billion), preventing groundwater contamination caused by leaking underground storage tanks (30 billion)(One single facility in the Silicon Valley contaminated 13,000 acres from leaking underground storage tanks), and for the removal of the carcinogens, polychlorinated biphenyl (PCB) from electrical equipment and asbestos insulation from buildings,(59 billion) (both substances are banned from manufacture and strictly regulated).

As we look toward Year 2001 we must continue to concentrate our efforts toward (1) hazardous waste minimization to the point of zero waste production, (2) recycling of minerals, metals, glass and all waste products to be used as raw materials by industries or in the production of energy, (3) safe, controlled destruction of hazardous wastes by using microwaves, lasers, and other new techniques that produce energy as a byproduct, (4) biotechnological treatment of contaminated waste waters and solid wastes to produce safe, odorless fertilizer and pure water, (5) biotechnological reclamation of land by genetically

engineered microbial degraders, polymer adsorption treatments with deep tillage and aeration, and the prevention of air pollution.

Over the last decade the US has emphasized and focused on environmental quality but too often a conflict develops, jobs vs the environment. Colorado has chosen to combine environmental remediation programs with the creation of new jobs. By the end of this century, hazardous waste site remediation projects will creat an estimated 3000 new jobs in Colorado alone.

Front Range Community College, Dept. of Environmental Biotechnology has accepted the challenge, and proceeded to develop a Hazardous Material Technology Program to educate workers, supervisors and managers to work in this rapidly expanding field.

Training people in how to deal with hazardous wastes and chemicals seemed a natural for many reasons:

1. The Denver Metropolitan area is the transportation center of the west with toxic materials moving in every direction by truck, train and air.

2. Megapolis problems include the Rocky Mountain Arsenal, radioactive and chemical wastes at the Rocky Flats Nuclear Plant, the toxic Lowry Land Fill Site, Stapleton Airport and many industries and traffic contributing to water, land and air pollution --- air, particularly during a temperature inversion in

the river valley next to the mountains.

3. Colorado problems include industrial dumps of hazardous chemicals and mine tailings with lead, mercury, copper, uranium and other toxic or radioactive materials that contaminate our land, air and water causing untold damage to the people living in the vicinity.

4. Unemployment and economic depression due to problems in the petroleum, mining and electronic industries, particularly cause a lack of lucrative employment opportunities for minorities and women.

We decided to develop a curriculum to train hazardous material technicians in a 2-year Associate of Science degree program. After 6 mo. of work with people from local businesses, industries, and governmental agencies (like EPA., Colorado Department of Health, Cities of Broomfield and Westminster, Adolph Coors Co., Hewlett Packard, Martin Marietta, Jacobs Engineering, Dames & Moore, Stearns-Rogers, and Rocky Mountain Analytical Labs), we held a press conference to announce that classes would begin in Aug.1988.

We had inquires from more than 500 interested students and companies. The 103 students who began the program in August came from every walk of life, with a mean age of 38, educational background from GED's to PhD's. They included unemployed and dislocated workers, trained and untrained, firemen, policemen, geologists, geophysists, chemists, biologists, computer experts,

nurses, lawyers, and consultants of all types. By Jan., there were >200 students in 22 classes held at FRCC, Rocky Flats, and Larimar County Center.

We offer the Associate of Science Degree for college transfer students, a certificate for those who only need the Hazmatt training, and both may take a Cooperative Education internship for job experience and entry. This training qualifies them for jobs as health and safety officers, compliance officers, site investigation workers, report and technical writers.

In response to many requests, last summer we developed and offered five 1-week short courses in Environmental Health and Safety for the protection of workers as required by Federal OSHA regulations for anyone working with hazardous materials. In 5 classes we trained over 100 people and made enough money to purchase the equipment, tyvex protective suits and the test instruments we had been borrowing to provide the training. We have continued to offer these short courses as often as possible. Just recently we trained 18 dislocated petroleum geologists and geophysists and another class of 38 people from all over Colorado and Wyoming. This OSHA short course has been so successful we obtained the equipment necessary to teach courses in Asbestos Abatement for workers, supervisors, inspectors, and management planners because many jobs were opening in the asbestos field. Then EPA approval was sought to enable us to train people in techniques of handling asbestos. We also conducted seminars through the Small Business Office for

businesses that generate small amounts of hazardous wastes, to make them aware of the laws and regulations and consequences of dumping these toxic wastes that pollute the air, land and waters and jeopardize the safety of the people living in the area.

We feel that we are meeting many community, state and national needs by:

1. Training people including women and minorities so they can be gainfully employed.
2. By providing trained people for hard-to-fill jobs in industry, business and government.

In addition, our long range goals are to:

* provide a model curriculum for other community colleges and universities to use in developing similar training programs.
* provide information to small businesses that are small quantity generators of hazardous wastes about appropriate recycling and legally-safe disposal methods.
* promote a national awareness of the environmental issues and regulations relating to the production, treatment, recycling, and disposal of hazardous materials and wastes.

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